Homeowners Guide to Heating Oil Tank Systems

Many Nova Scotians enjoy the comfort and convenience of oil heat in their homes, but few people think about the possible problems of storing heating fuel on their property. This guide explains how you can lessen the environmental risk posed by above-ground heating oil tanks.

Did You Know

- Although the number appears to be declining, each year in Nova Scotia there are hundreds of spills from home heating oil tanks.
- Oil from a leaking tank can contaminate the soil and become a threat to drinking water supplies. As well, odours can often enter dwellings through the sewer system or through foundation walls and floors.
- The cost to clean up a spill can range from several thousand to hundreds of thousands of dollars. Plus, there is the added disruption and inconvenience of the cleanup.

Oil Spills

Spills occur for a variety of reasons including corrosion, overfilling, improper tank location, and improper installation and/or maintenance. If not properly installed and maintained, the domestic heating oil tank found at most homes in Nova Scotia has the potential to affect human health and the environment, and become a financial liability.

Remember that you, the homeowner, are responsible for reporting and cleaning up an oil spill. Once an accident occurs, you must act immediately to stop the spread of oil and start the cleanup.

Insurance Coverage

Insurance coverage for home heating oil tank spills will vary depending on the insurance company. Coverage will range anywhere from "no coverage" to "full coverage." Sometimes, coverage may apply only to neighbouring properties but not for the owners' property. It is recommended that you contact your insurance company and discuss your policy before a spill occurs.

Tanks

Most tanks used for domestic heating oil are steel or composite material containers that hold about 1000 litres (200 gallons) and weigh about 1000 kilograms (1 ton) when full. Their tall, narrow shape lets them easily pass through standard doorways, but it also makes them fairly unstable unless they have proper, secure supports to keep them from tipping over.

Recommendations:

- Your oil tank should be installed and labelled to show that it meets national construction standards. These standards include
  - National Standard of Canada's CAN/ULC-S602, *Aboveground Steel Tanks for the Storage of Combustible Liquids Intended to Be Used as Heating and/or Generator Fuels*
  - Underwriters' Laboratories of Canada's ULC/ORD C80, *Aboveground Non-metallic Tanks for Fuel Oil*

- Consider an innovative tank. Manufacturers use a number of technologies to produce tanks that have a longer life. These include double-walled tanks, fibreglass tanks, composite plastic/metal tanks, lined tanks, stainless steel tanks, and heavier-walled, 2.5-mm (12 guage) steel tanks. They may come in different shapes to enhance stability. They may feature a different oil outlet type to prevent water accumulation in the tank. They may include an anti-siphon device or a fuel safety valve to prevent oil from spilling if the supply line is broken. It is recommended that you investigate these options when purchasing a new or replacement tank. The initial cost may be higher, but tank service life is usually longer.

- Check if your insurance company will recognize the longer service life of these tanks. Some progressive firms even offer a premium reduction for safety features such as secondary containment (i.e. double-walled).

- Your tank should be installed by a trained installer. Domestic heating oil tanks are to be installed in accordance with
  - Canadian Standards Association's CSA B-139, *Installation Code for Oil-Burning Equipment* (latest recognized edition)
  - *National Fire Code of Canada* (latest edition)

  Make sure that your installer is following these codes. Also, check to see if your installer has received training on these codes.

- All domestic heating oil tank systems should be inspected regularly by a heating service professional.

Indoor Tanks

You should install your oil tank indoors rather than outdoors, whenever feasible.

Benefits

Indoor tanks are not exposed to the elements, including extreme temperatures, rain, snow, and ice. These conditions cause external corrosion and create condensation, which leads to internal corrosion. Indoor tanks also have less risk of accidental damage and vandalism. Without these destructive forces, indoor tanks have a greater life expectancy, lower maintenance costs, and less chance of spilling.

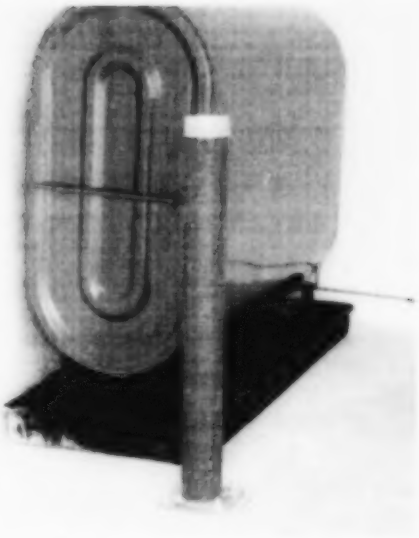
Indoor tanks provide better performance and less maintenance for domestic oil heating systems, because the fuel is kept at a constant temperature. In addition, indoor tanks are not at risk for frozen supply lines.

There should be no odours from a properly installed indoor tank. If the tank begins to weep from internal corrosion, early detection from odours is more likely with an indoor tank than with one located outside. Early detection can save thousands of dollars in cleanup and environmental costs.

Recommendations

- Locate your indoor oil tank at least 1.5 m (5 ft) from any fuel-fired appliance. (Check with your local municipal building code authority for variances to this requirement.)
- Place your oil tank in an area where it is unlikely to be adversely affected by normal household activities.
- Ensure that your oil tank can be visually inspected from all sides. For single-walled tanks and double-walled tanks without leak-detecting devices, try to maintain a minimum of 100 mm (4 in) from two walls, 450 mm (18 in) from any remaining walls, and 100 mm (4 in) from the floor.

- If the tank is installed in a garage, provide adequate protection from vehicular traffic.
- If feasible, have a release barrier (e.g., drip tray) installed under any single-walled tank or oil supply line fittings (e.g., oil filter) in order to contain any leaks.
- If feasible, have existing floor drains, sumps, or other openings located near the tank sealed to prevent any spills from escaping.



Outdoor Tanks

All outdoor tanks are at risk for movement as the result of seasonal weather conditions, which can cause ground shifts and frost heaves. This is especially true for new installations placed on recently disturbed ground, such as back-fill material against the foundation of a newly constructed home. Special attention must be given during these installations to ensure proper stability to support the weight of the tank plus the oil.

Additional stability should be considered in areas subjected to flooding and/or high winds. A shelter or anchoring device that does not adversely affect the operation of the tank should be installed. For example, if you use a strap or a bracket as an anchoring device, ensure that the strap/bracket does not cause chafing or increased corrosion.

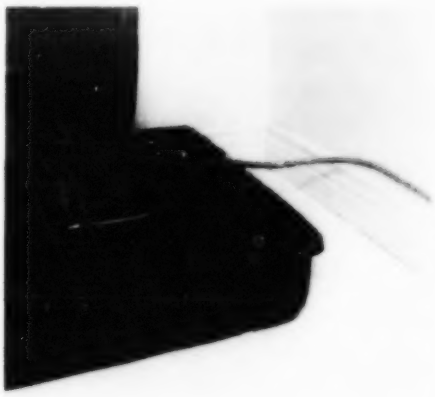
Recommendations

- Ensure that your outdoor oil tank is properly supported, with the legs centred, to prevent it from shifting, settling, or falling over. The support legs of an above-ground tank should be installed on a concrete pad or reinforced patio stones. A well-drained sub-grade should also be used to provide drainage.
- Locate your oil tank on a foundation or bedding that drains away from the house.
- Install your oil tank down grade from any drinking water well.
- Ensure that your oil tank does not block building entrances or windows, including basement windows.
- Do not locate your oil tank directly under house eaves where it may be subjected to falling snow and icicles or to increased external pitting from dripping water.
- Ensure that your oil tank is not placed in contact with the building. Leaves and other organic matter can accumulate between the tank and the building, causing external corrosion.
- Ensure that your oil tank is not in contact with plants or grass. Their moisture can lead to accelerated corrosion of the tank.
- Provide your oil tank with adequate protection in areas exposed to vehicles.

Oil Supply Lines

Indoor Tanks

- Protect the oil supply line for an indoor tank from physical damage by routing it around the perimeter of the basement wall.



- Use an oil supply line that comes equipped with a protective covering, such as grooved, polyethylene-coated copper tubing, to reduce the risk of a leak if the copper line breaks.
- An unprotected copper oil supply line that is buried in soil or concrete or resting on a concrete wall should have a specifically designed protective sleeve. Otherwise, the copper may corrode quickly, causing the line to leak.

Outdoor Tanks

- Protect the oil supply line from the weight of snow, ice, or other objects that could cause the line to pinch or break and leak oil.
- Install the oil supply line on a downward slope from the tank to the building to prevent the accumulation of water and possible freezing of the line.
- Have a minimum of one horizontal loop in the line to allow for frost heaving and movement.
- Use an oil supply line made with at least a 10 mm (3/8 in) outside diameter copper tubing. The department encourages the industry practice of installing a larger-diameter line (minimum of 13 mm—1/2 in—outside diameter) on the outside of the house to reduce the potential for freezing.
- Apply a rust-proof paint to all parts of the tank, including legs and bottom.

Taking Care of Your Tank

- Do not install a used or "refurbished" tank. Any tank that was removed from its original location was removed for a reason. Often the "refurbished" tank was either leaking at another site or was replaced due to its age. Reuse is simply inviting problems and a likely leak.

- Determine if your tank has any metal tags or labels attached. These tags will help identify whether the tank was manufactured to national construction standards. Other useful information you may find on the tag includes the year it was manufactured and, in the case of steel tanks, the gauge (or thickness) of steel used to build the tank.
- From time to time, check the outside of your tank for any rust. Be careful when rubbing your hand over damp spots or rust bubbles. The slightest pressure may cause a small leak in a corroded tank.
- Check your tank for obvious signs of damage. Damage includes, but is not limited to, dents, bent or pinched lines, cross-threaded fittings, a broken or cracked fill gauge, cracked or weeping weld seams, and broken or heaved base support. Such damage may accelerate internal or external corrosion, oil supply line failure, threaded joint or weld failure, and/or tank upset.
- Before and after each fill, inspect the vent and fill pipes and the tank bottom for leaks and spills, as they may not be evident until a change in volume occurs.
- Remove vegetation and debris such as tall grass, leaves, ice, snow, and insect nests from on or under your tank. Any contact of this material with your tank may accelerate corrosion.
- If frost heaving or ground settling causes your tank to move, have the tank levelled immediately. A tank resting on a non-level surface may be more susceptible to upset.
- Arrange to have sludge and water removed from the tank every year. If left unchecked, water and sludge will accelerate internal corrosion in unprotected steel tanks (i.e., tanks not constructed or lined with non-corrosive materials). Also, check with your fuel company about fuel oil additives to reduce the water in your tank.
- Keep the tank relatively full over the summer so that less water from condensation will collect inside.
- Arrange to have your oil filter(s) serviced at least once a year.
- When replacing your tank, avoid transfering the contents of the old tank into the new one. New steel tanks are initially more susceptible to corrosion caused by the presence of sludge, acids, microorganisms, and water. Putting these contaminants in a new

steel tank can result in premature failure in as little as eight months.

- Many oil providers now offer maintenance packages for homeowners as part of an overall customer service plan. If tank inspections are covered under the plan, potential problems may be identified early.
- A number of devices to help you detect and contain leaks are now available. These products can prevent leaks from making it into the environment by either alerting a homeowner during the initial stages of a leak or containing any spilled oil. For more information on these types of devices, contact your oil supplier.
- Nova Scotia experiences variable adverse weather and weather-related conditions, including ice storms, blizzards, hurricanes, and floods. Several weather protection devices are now available to help protect against weather-related damage. They include fill gauge and oil supply line protectors and tank stability brackets and straps. Check with your oil provider for information about weather protection devices.

Heating Oil Tank System Checkup

There are several factors that may affect the lifespan of your domestic heating oil storage system. They include, but are not limited to, the tank's type, age, location, outlet type, support base, line protection, and maintenance.

This following questionnaire will help you, the homeowner, to identify any potential problems with your oil storage system and determine your comfort level with the risks associated with them. Note that this assessment of potential risks does not guarantee that an incident will not occur in the future. It is merely a self-evaluation guide to assist you in your decision-making process.

Questions indicated with an asterisk (*) apply only to unprotected tanks (ie, tanks not constructed or lined with non-corrosive materials).

21-Point Oil Tank System Checkup

1. Does the tank have a tag or label showing it has been constructed to meet national standards?
   ❑ Yes ❑ No

2. Is the tank free from visual signs of damage?
   ❑ Yes ❑ No

3. Do the vent and fill pipes exit your home in the case of an inside installation?
   ❑ Yes ❑ No

4. Is the fuel filter inside the building?
   ❑ Yes ❑ No

5. Is the tank fully above ground (no partially buried components)?
   ❑ Yes ❑ No

6. Has fuel been transferred from an old tank to a new tank?*
   ❑ Yes ❑ No

If you answered "No" to any of the first five questions and/or "Yes" to question six, the department considers your system to be at a higher risk and recommends that you have a heating service professional check your oil tank as soon as possible.

7. Is the tank shell thickness greater than 14 gauge steel?*
   ❑ Yes ❑ No

8. Is the tank less than 15 years old?*
   ❑ Yes ❑ No

9. Does the tank have a bottom feed outlet?*
   ❑ Yes ❑ No

10. Is the tank installed inside?
    ❑ Yes ❑ No

11. Has the tank been installed vertically?
❑ Yes ❑ No

12. Does the oil line run on top of the basement floor?
❑ Yes ❑ No

13. Does the tank have a vent whistle or alarm?
❑ Yes ❑ No

14. Is the tank equipped with an outlet valve/line protector?
❑ Yes ❑ No

15. Is the tank equipped with an oil-level gauge protector?
❑ Yes ❑ No

16. Is the tank equipped with an anchoring device?
❑ Yes ❑ No

17. Is the tank painted with a corrosion resistant coating?*
❑ Yes ❑ No

18. Does the tank have an internal corrosion resistant coating?*
❑ Yes ❑ No

19. Do you routinely remove any water/sludge buildup in the tank?*
❑ Yes ❑ No

20. Is the system equipped with secondary containment or leak detection devices?
❑ Yes ❑ No

21. Do you have a maintenance service agreement with your oil provider?
❑ Yes ❑ No

As a general rule, each "No" you answered to these questions (and/or "Yes" to question six) increases the risk associated with your oil heating system. This assessment, coupled with the information throughout the guide, should provide you with a good basis for determining your comfort level with any potential problems associated with your oil tank system. If your evaluation raises your level of concern over some aspect of your system, the department recommends that you have a heating service professional conduct a more detailed examination.

Disposal of Old Tanks

Once a domestic heating oil tank is removed from service, both the tank and any remaining oil, sludge or residue must be removed and disposed in an environmentally acceptable manner.

Do not abandon old tanks or their contents, or allow oil, sludge or residue to leak into the environment. It is illegal and irresponsible.

If the tank must be moved before the contents are removed, all openings should be properly sealed to prevent spills.

Your oil tank installer may be able to remove and dispose of any oil, sludge and residue left in the old tank. If not, many municipally operated household hazardous waste facilities will accept old heating oil and sludge from homeowners free of charge.

Old steel can be recycled into new products. Many metal recycling facilities, local scrap or salvage yards, and municipal disposal facilities accept old oil tanks. Ask your tank installer if he or she will take back the old tank as part of the contract to install the new tank. If not, your installer or local municipality may help you find a proper disposal location.

More Information

For more information on domestic heating oil tanks, contact tank supply and service companies (see *Tanks* or *Heating* in the Yellow Pages), heating oil suppliers, or the Nova Scotia Chapter of the Canadian Oil Heat Association.

You may also contact your nearest Nova Scotia Environment and Labour office:

Nova Scotia Environment and Labour
PO Box 697
5151 Terminal Road
Halifax, Nova Scotia
B3J 2T8
(902) 424-5300

Central Region	(902) 424-7773
Northern Region	(902) 893-5880
Western Region	(902) 679-6086
Eastern Region	(902) 563-2100

Or visit the department online at www.gov.ns.ca/enla.

To report a heating oil leak or spill to Nova Scotia Environment and Labour, call one of the regional offices listed above during regular business hours, or call Environmental Emergencies at any hour:

1-800-565-1633

For more information on your responsibilities as a homeowner in the event of a spill, view the department's Domestic Fuel Oil Spill Policy at www.gov.ns.ca/enla.

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